CLAIMS

1. A transmitter that is applied to a radio communication system, and transmits a radio frame to a receiver using at least one available channel, the transmitter comprising:

a transmission media-access-control unit that divides, when the transmitter transmits data using two or more channels, the data into number of applying channels to be used, and generates transmission data for each of the channels using divided data;

a radio-frame generating unit that generates a radio frame that contains each of the transmission data; and

a transmission applying-channel notifying unit that inserts channel information for identifying a channel into each radio frame, wherein

the transmitter transmits each radio frame containing the channel information.

2. The transmitter according to claim 1, wherein

the transmission applying-channel notifying unit inserts the channel information into an unused area of transmission data generated by the transmission media-access-control unit.

3. The transmitter according to claim 1, wherein

the transmission applying-channel notifying unit inserts the channel information into a preamble of the radio frame.

4. The transmitter according to claim 1, wherein

the transmission applying-channel notifying unit notifies the channel information to the radio-frame generating unit, when the radio-frame generating unit generates the radio frame using the channel information,

and

the radio-frame generating unit executes a predetermined transmission processing on each transmission data, and uses the channel information for an initial value of a scramble processing as one of the transmission processing, when generating the radio frame.

5. The transmitter according to claim 1, wherein

the radio-frame generating unit includes an encoding unit that encodes the transmission data contained in the radio frame,

the transmission applying-channel notifying unit inserts the channel information into an encoding-unit initializing section for initializing the encoding unit within the radio frame, and

the radio-frame generating unit initializes the encoding unit at a timing when an input of a pattern of the encoding-unit initializing section to the encoding unit is completed.

6. The transmitter according to claim 1, wherein

the transmission media-access-control unit checks a reception state of a plurality of channels belonging to the radio communication system, and determines the applying channel based on a result of the check.

7. The transmitter according to claim 1, wherein

the channel information includes at least one of an identical frame mark for identifying whether a radio frame received by the receiver is addressed to a local apparatus and applying-channel-number information indicating a channel number of the applying channel.

8. The transmitter according to claim 7, wherein

the applying-channel-number information includes information indicating an order of transmission frames generated by the transmission media-access-control unit by dividing transmission data.

9. The transmitter according to claim 3, wherein

when a wireless local-area-network is used as the radio communication system, the channel information to be inserted into the preamble is a special preamble pattern obtained by inverting a polarity of a part of either one of a short training symbol and a long training symbol that constitute a preamble of the wireless local-area-network frame.

10. A receiver that is applied to a radio communication system, and receives a radio frame from a transmitter in the radio communication system using at least one available channel, the receiver comprising:

a receiving unit that generates reception data by performing a predetermined reception processing on the radio frame received from the channels;

a reception applying-channel notifying unit that extracts reception data addressed to a local apparatus based on either one of information extracted by the reception processing and channel information contained in the reception data; and

a reception media-access-control unit that generates a reception frame by reassembling an original transmission frame from the reception data extracted by the reception applying-channel notifying unit.

11. The receiver according to claim 10, wherein

the receiving unit executes a descramble processing as the predetermined reception processing, and outputs an initial value extracted by the descramble processing to the transmission applying-channel notifying unit.

12. The receiver according to claim 10, wherein

the receiving unit executes a demodulation processing as the predetermined reception processing, and outputs at least one of a preamble generated by the demodulation processing and data of an encoding-unit initializing section contained in demodulated data to the transmission applying-channel notifying unit.

13. A radio communication apparatus that is applied to a radio communication system, and communicates with other radio communication apparatus in the radio communication system using at least one available channel, the radio communication apparatus comprising:

a transmitter that includes

a transmission media-access-control unit that divides, when the transmitter transmits data using two or more channels, the data into number of applying channels to be used, and generates transmission data for each of the channels using divided data;

a radio-frame generating unit that generates a radio frame that contains each of the transmission data; and

a transmission applying-channel notifying unit that inserts channel information for identifying a channel into each radio frame, wherein

the transmitter transmits each radio frame containing the channel information; and

a receiver that includes

a receiving unit that generates reception data by performing a predetermined reception processing on the radio frame received from the channels;

a reception applying-channel notifying unit that extracts reception data addressed to a local apparatus based on either one of information extracted by the reception processing and channel information contained in the reception data; and

a reception media-access-control unit that generates a reception frame by reassembling an original transmission frame from the reception data extracted by the reception applying-channel notifying unit.

14. The radio communication apparatus according to claim 13, wherein

the transmission applying-channel notifying unit inserts the channel information into an unused area of transmission data generated by the transmission media-access-control unit, and

the reception applying-channel notifying unit extracts the channel information from the reception data.

15. The radio communication apparatus according to claim 13, wherein

the transmission applying-channel notifying unit notifies the channel information to the radio-frame generating unit, when the radio-frame generating unit generates the radio frame using the channel information,

the radio-frame generating unit executes a predetermined transmission processing on each transmission data, and uses the channel information for an initial value of a scramble processing as one of the transmission processing, when generating the radio frame, and

the receiving unit executes a descramble processing as the predetermined reception processing, and outputs an initial value extracted by the descramble processing to the transmission applying-channel notifying unit.

16. The radio communication apparatus according to claim 13, wherein

the transmission applying-channel notifying unit inserts the channel information into a preamble of the radio frame, and

the receiving unit executes a demodulation processing as the predetermined reception processing, and outputs a preamble generated by the demodulation processing to the transmission applying-channel notifying unit.

17. The radio communication apparatus according to claim 13, wherein

the radio-frame generating unit includes an encoding unit that encodes the transmission data contained in the radio frame,

the transmission applying-channel notifying unit inserts the channel information into an encoding-unit initializing section for initializing the encoding unit within the radio frame,

the radio-frame generating unit initializes the encoding unit at a timing when an input of a pattern of the encoding-unit initializing section to the encoding unit is completed, and

the receiving unit executes a demodulation processing as the predetermined reception processing, and outputs data of an encoding-unit initializing section contained in demodulated data to the transmission applying-channel notifying unit.

18. The radio communication apparatus according to claim 13, wherein

the transmission media-access-control unit checks a reception state of a plurality of channels belonging to the radio communication system has, and determines the applying channel based on a result of the check.

19. The radio communication apparatus according to claim 13, wherein

the channel information includes at least one of an identical frame mark for identifying whether a radio frame received by the receiver is addressed to a local apparatus and applying-channel-number information indicating a channel number of the applying channel.

20. The radio communication apparatus according to claim 19, wherein

the applying-channel-number information includes information indicating an order of transmission frames generated by the transmission media-access-control unit by dividing transmission data.

21. The radio communication apparatus according to claim 16, wherein

when a wireless local-area-network is used as the radio communication system, the channel information to be inserted into the preamble is a special preamble pattern obtained by inverting a polarity of a part of either one of a short training symbol and a long training symbol that constitute a preamble of the wireless local-area-network frame.